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(71) Applicant and

(72) Inventor: KUZMIK, Jan [SK/SK]; Belopotockeho 2, 811 05 Bratislava (SK).

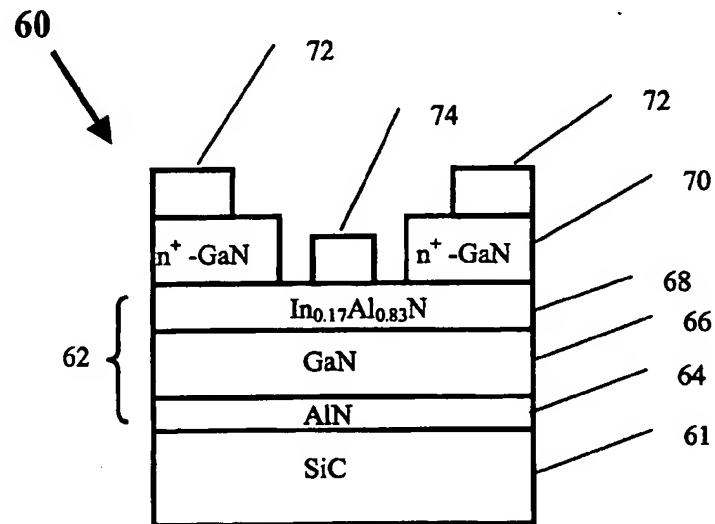
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(54) Title: HIGH ELECTRON MOBILITY DEVICES

WO 03/015174 A3



(57) Abstract: The present invention is directed to high frequency, high power or low noise devices such as low noise amplifiers, amplifiers operating at frequencies in the range of 1 GHz up to 400 GHz, radars, portable phones, satellite broadcasting or communication systems, or other devices and systems that use high electron mobility transistors, also called hetero-structure field-effect transistors. A high electron mobility transistor (60 and 80) includes a substrate (61), a quantum well structure (62) and electrodes (72 and 74). The high electron mobility transistor has a polarization-induced charge of high density. Preferably, the quantum well structure (62) includes an AlN buffer layer (64), an un-doped GaN layer (66), and an un-doped InAlN layer (68).